

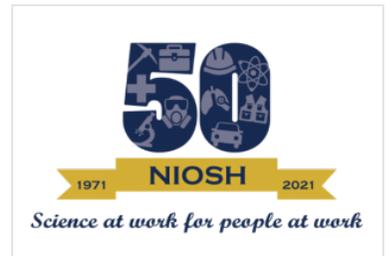


NIOSH Science Blog

World Trade Center Health Program: First Decade of Research

Posted on June 21, 2021 by Albeliz Santiago-Colón, PhD; Robert D. Daniels, PhD, CHP; Travis Kubale, PhD; and Max Lum, Ed.D, MPA

This year marks the 50th anniversary of the National Institute for Occupational Safety and Health and the 10th year of the World Trade Center Health Program.



Background

The September 11, 2001 attacks on the World Trade Center in New York City (NYC), the Pentagon in Arlington, Virginia, and the plane crash in Shanksville, Pennsylvania resulted in nearly 3,000 deaths and thousands of injuries. The devastation caused physical hazards as well as a massive [dust cloud](#), consisting of pulverized building materials, electronic equipment, and furniture which blanketed the [World Trade Center site](#) and the surrounding area. It is estimated that nearly a half million people are at increased risk of adverse health effects from exposures to physical, psychological, and emotional stressors in the days, weeks, and months following the terrorist attacks.

One of the early responders to the scene at the World Trade Center was James Zadroga, a New York City Police Department detective. He later died of a respiratory disease that has been attributed to his participation in rescue and recovery operations in the rubble of the World Trade Center site. In remembrance of his efforts and those of his colleagues, the James Zadroga 9/11 Health and Compensation Act of 2010 (the Zadroga Act) was signed into law creating the [World Trade Center Health Program \(WTCHP\)](#). The WTCHP is administered by the director of the National Institute for Occupational Safety and Health (NIOSH).

The WTCHP provides medical monitoring and treatment for emergency responders, recovery and cleanup workers, and volunteers who helped at the World Trade Center, the Pentagon, and the crash site near Shanksville, Pennsylvania. This includes treatment for adverse health effects from exposures to physical, psychological, and emotional stressors resulting from the terrorist's attacks. The Program also provides initial screenings and treatment to those who were present on the day of the attacks or who worked, lived, or went to school in the New York City disaster area on September 11th or the months that followed.

The WTCHP serves [four groups of people](#) affected by the 9/11 attacks:

- FDNY Responders,
- WTC General Responders,
- WTC Survivors (lived, worked, or went to school in NYC Disaster Area), and

- Pentagon/Shanksville Responders

Individuals in these groups affected by the 9/11 attacks can get more information on how to apply for the WTCHP on the [website](#).

As of December 31, 2020, 108,666 individuals including responders, local workers and resident survivors are enrolled in the WTCHP. The clinical monitoring and treatment categories under which most members are certified include aerodigestive (affecting both the respiratory and digestive tracts), cancer, mental health, and musculoskeletal and acute traumatic injuries., The ten most common certified conditions are:

- Chronic Rhinosinusitis
- Gastroesophageal Reflux Disease (GERD)
- Cancers
- Asthma
- Sleep Apnea
- Post-Traumatic Stress Disorder (PTSD)
- Chronic Respiratory Disorder – Fumes / Vapors
- WTC-Exacerbated Chronic Obstructive Pulmonary Disease (COPD)
- Anxiety Disorder (Not otherwise specified)
- Major Depressive Disorder

The Zadroga Act also established and provided funding for regular stakeholder involvement creating a Scientific/Technical Advisory Committee (STAC) and two Steering Committees. The STAC is comprised of scientists and clinicians who make recommendations to the WTCHP Administrator on applicants' program eligibility. The steering committees include representatives of the responder and survivor populations, the Clinical Centers of Excellence providing services, and pertinent city government offices.

WTCHP Research Program

Federal funds were made available in 2011 to support specific occupational health clinics throughout the NYC metropolitan area who were providing health surveillance and patient care for 9/11-related health conditions. The WTCHP supports the [WTC Health Registry](#), operated by the NYC Department of Health and Mental Hygiene, including its research activities. In addition, the WTCHP supports a comprehensive nationwide provider network.

The WTCHP funds a portfolio of research to better understand the health conditions of the WTCHP members. As of June 30, 2020, there were a total of 944 publications including 291 (31%) peer-reviewed articles funded by the WTCHP.

Most WTCHP-funded publications (78%) examined responders (vs. survivors). Research focused on characterizing the burden and etiology of WTC-related health conditions. Most WTCHP-funded research, focused on aerodigestive disorders (29%), mental health (26%), emerging conditions (23%), vulnerable populations (12%), and cancer (7%).

Research Highlights

- Through March 2020, aerodigestive disorders comprised the largest clinical monitoring and treatment category

accounting for 56% of members conditions.

- Research studies suggest a significant and persistent increased risk of PTSD among the affected population.
- Evidence of modestly increased cancer risk in the WTC population for all cancer combined, thyroid cancer, and prostate cancer with intermittent indications of other excess cancers.
- Pregnant women, women of reproductive age, the elderly, adolescents, and other minor children represent potentially vulnerable groups within the affected population. Opportunities for future research involving vulnerable populations are diminishing with time therefore, research is urgently needed to better identify at risk populations, characterize their burden, and inform care.
- Research involving WTC survivors exposed before 18 years of age is the major contributor to existing research on vulnerable populations. This research includes:
 - Pre-natal exposure studies primarily evaluating neurodevelopment and cognitive effects, followed by gestation and infant growth.
 - Several studies evaluating the impact of childhood exposures and health effects later in life (i.e., adolescence), such as behavioral and mental health outcomes, risk behaviors, health service needs and use, and gene-environment interactions.

Uncovering New Conditions

Ongoing WTC-related surveillance and research activities may periodically uncover new health conditions that need to be thoroughly evaluated. Topics of current interest include autoimmune diseases, cardiovascular disease, and issues associated with cognitive impairment as WTCHP members age.

Future Directions

We look to WTCHP researchers and medical providers to provide information over time that will help determine the full extent of WTC-related health conditions. Researchers are seeking to provide more effective approaches for medical monitoring and understanding the long-term clinical effects to improve the healthcare and wellbeing of at-risk populations. Future research will examine knowledge gaps, especially in areas of causal determinates, disease progression, and emerging health conditions. Finally, research is needed to examine prevention and mitigation strategies intended to reduce adverse health effects in populations affected by future disasters.

A comprehensive review and more in-depth reports of research findings of the WTCHP's first decade of research is available [here](#).

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This blog is part of a [series](#) for the NIOSH 50th Anniversary. Stay up to date on how we're celebrating NIOSH's 50th Anniversary on our [website](#).

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